

# BAND STEREO RADIO CASSETTE RECORDER

MODEL NO. TPR-950E,K

**AIWA®**  
**(SERVICE MANUAL)**



Shown above is TPR-950K

DATE OF ISSUE 9/1978

## SPECIFICATIONS

### GENERAL

**Semiconductors:** 4 IC's, 1 FET, 45 transistors, 19 diodes, 3 LED's

**Power Source:** Batteries DC 9V (UM-1 x 6) AC 120V/220V (E model)

AC 120V/240V (K model) (switchable) 50/60 Hz

**Power consumption:** 17W (E model), 20W (K model)

**Speakers:** Woofer 160 mmφ x 2

Tweeter 52 mmφ x 2

**Dimension:** 490(W) x 370(H) x 130(D) mm

**Weight:** 7 kg (including batteries)

**Supplied accessories:** AC power cord x 1

Cassette tape x 1

Batteries (SUM-1) x 6

Head cleaning stick x 1

### RADIO SECTION

**Circuit:** Superheterodyne

**Frequency range:** FM87.5~108 MHz

SW<sub>1</sub> 5.7~18.5 MHz

SW<sub>2</sub> 5.8~6.5 MHz (49 m Band)

MW515~1650 kHz

LW145~320 kHz

**Intermediate frequency:**

FM 10.7 MHz

SW<sub>1</sub>, SW<sub>2</sub>, MW, LW 455 kHz (E model)

SW<sub>1</sub>, SW<sub>2</sub>, MW, LW 468 kHz (K model)

FM 4±3 dB (at 88 MHz)

3±3 dB (at 98, 108 MHz)

SW<sub>1</sub> 28±5 dB (at 5.9 MHz)

20±5 dB (at 12, 18 MHz)

SW<sub>2</sub> 28±5 dB (at 5.95, 6.1, 6.2 MHz)

MW 43±4 dB (at 600 kHz)

42±4 dB (at 1000, 1400 kHz)

(at S/N 10 dB)

LW 53±5 dB (at 150 kHz)

50±5 dB (at 220, 300 kHz)

**FM stereo separation:** 30±5 dB (at 1 kHz)

**Antennas:** Built-in whip antenna for FM, SW<sub>1</sub>, SW<sub>2</sub>, Built-in ferrite bar antenna for MW, LW

### TAPE RECORDER SECTION

**Tape speed:** 4.76 cm/sec. ±2.5%

**Recording system:** AC bias

**Erasing system:** AC erase

**Record bias frequency:** 54.5 kHz

**Distortion:** Less than 1.7% (PB)

Less than 3.0% (REC/PB)

**Frequency response:** Normal (LH) tape: 50~12,000 Hz

CrO<sub>2</sub> tape: 50~14,000 Hz

Fe-Cr tape: 50~14,000 Hz

**Signal to noise ratio:** More than 50/46 dB [DC/AC] (PB)

(Un-Weighted) More than 43/42 dB [DC/AC] (REC/PB)

**Erasing ratio:** More than 55 dB

**Separation:** More than 35 dB (REC/PB)

**Maximum output power:**

9.4W (4.7W + 4.7W)

**Head:** Ferrite guard head (FGH)

**FF & rewind time:** 80±5 sec.

**Automatic stop system:**

Mechanical full auto stop

**Automatic shut-off action time:**

Less than 10 sec.

**Pinch roller pressure:** 300±30g

**Wow & Flutter:** Less than 0.09% (WRMS)

**Take-up torque:** 50±10 g-cm

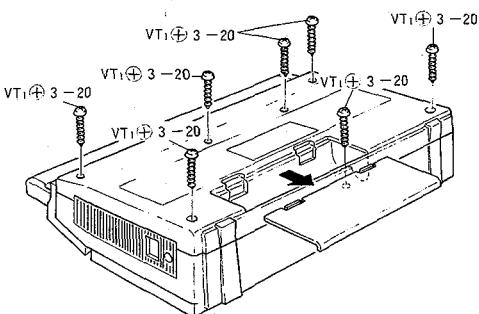
**FF & rewind torque:** 100<sup>+20</sup><sub>-10</sub> g-cm

• The specifications and external appearance of this set are subject to change without prior notice.

## DISASSEMBLY INSTRUCTIONS

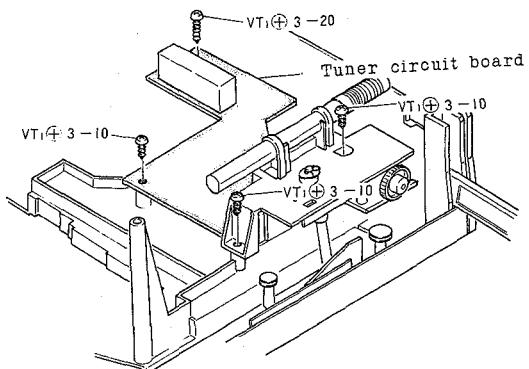
## To Remove Back Cover

Remove 7 screws.



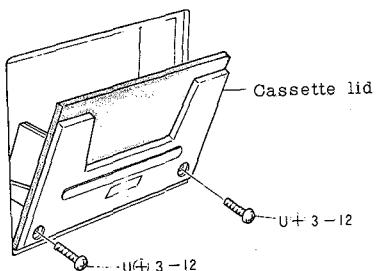
## To Remove Tuner Circuit Board

Remove 4 screws.



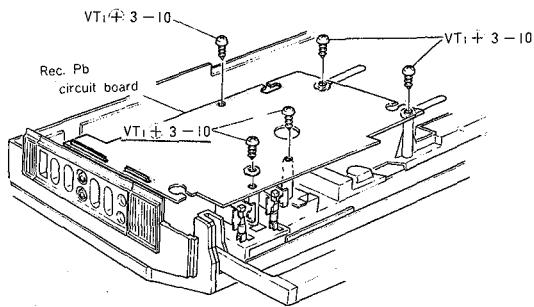
## To Remove Cassette Lid

Remove 2 screws.



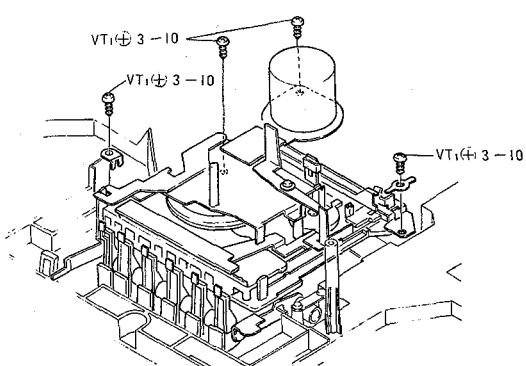
## To Remove REC/PB Circuit Board

Remove 5 screws.



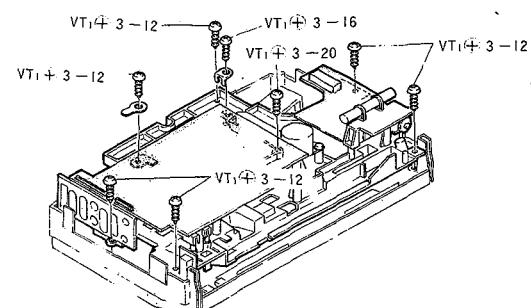
## To Remove Mechanism

Remove 4 screws.

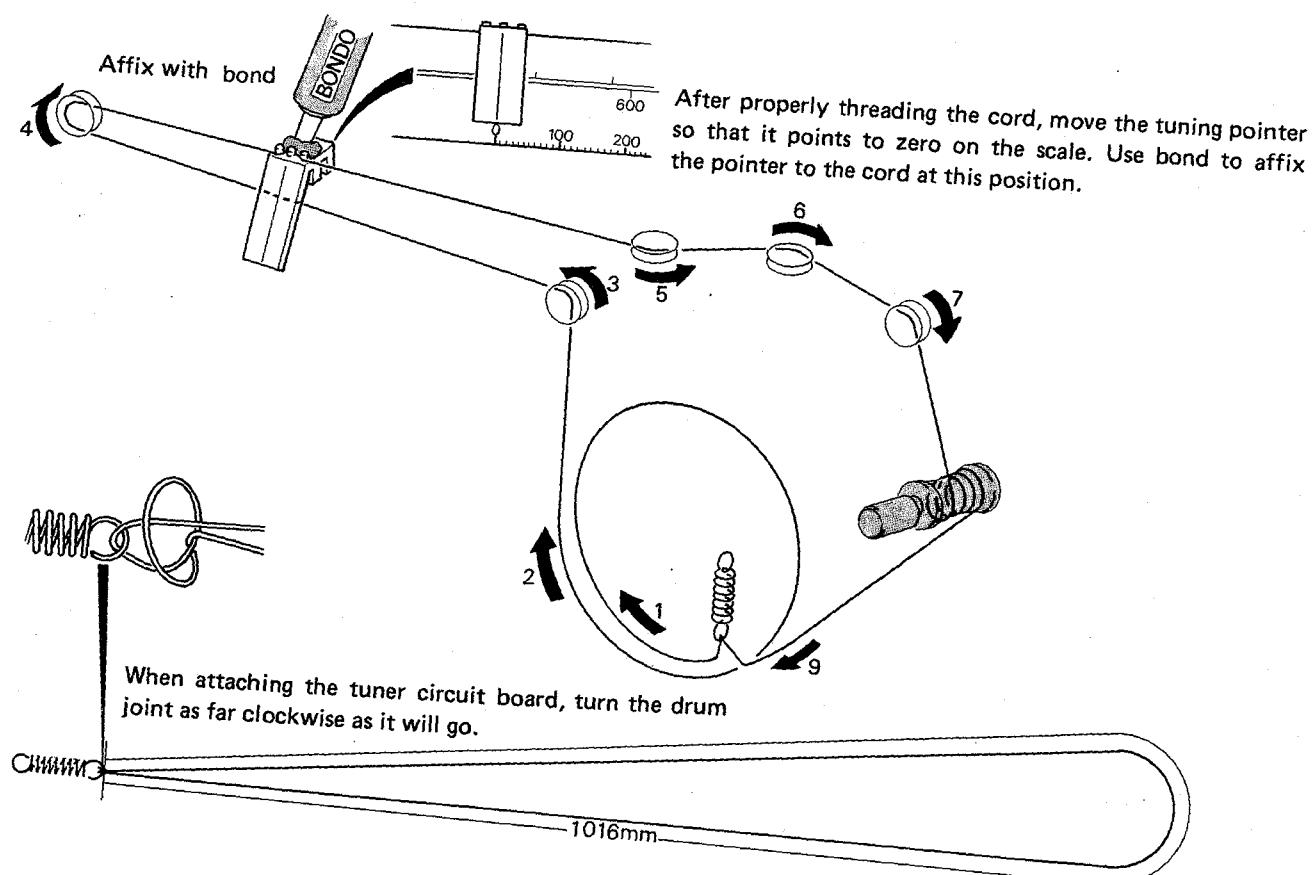


## To Remove Main Cabinet

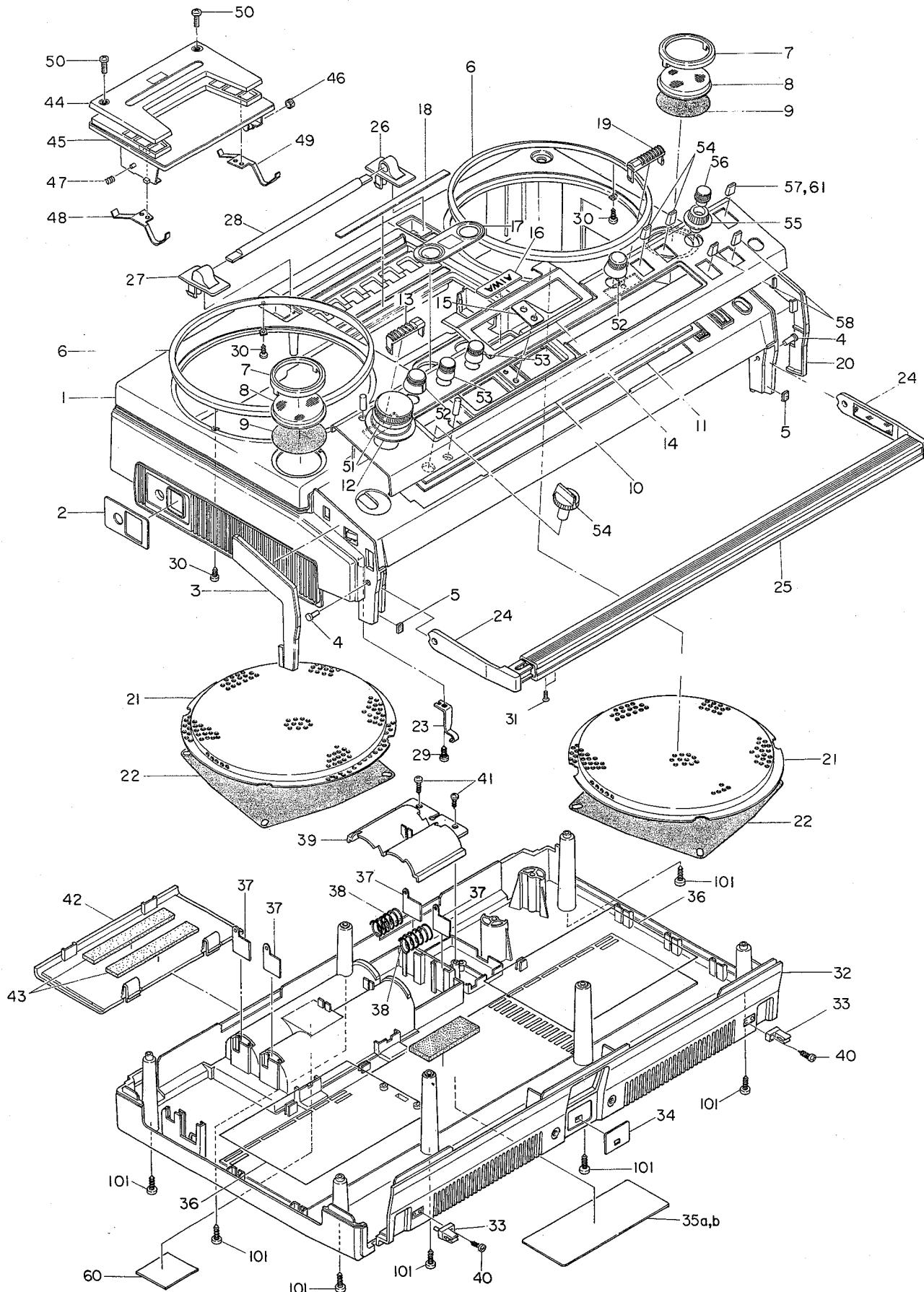
Remove 8 screws.



## DIAL CORD STRINGING



## **EXPLODED VIEW-1**



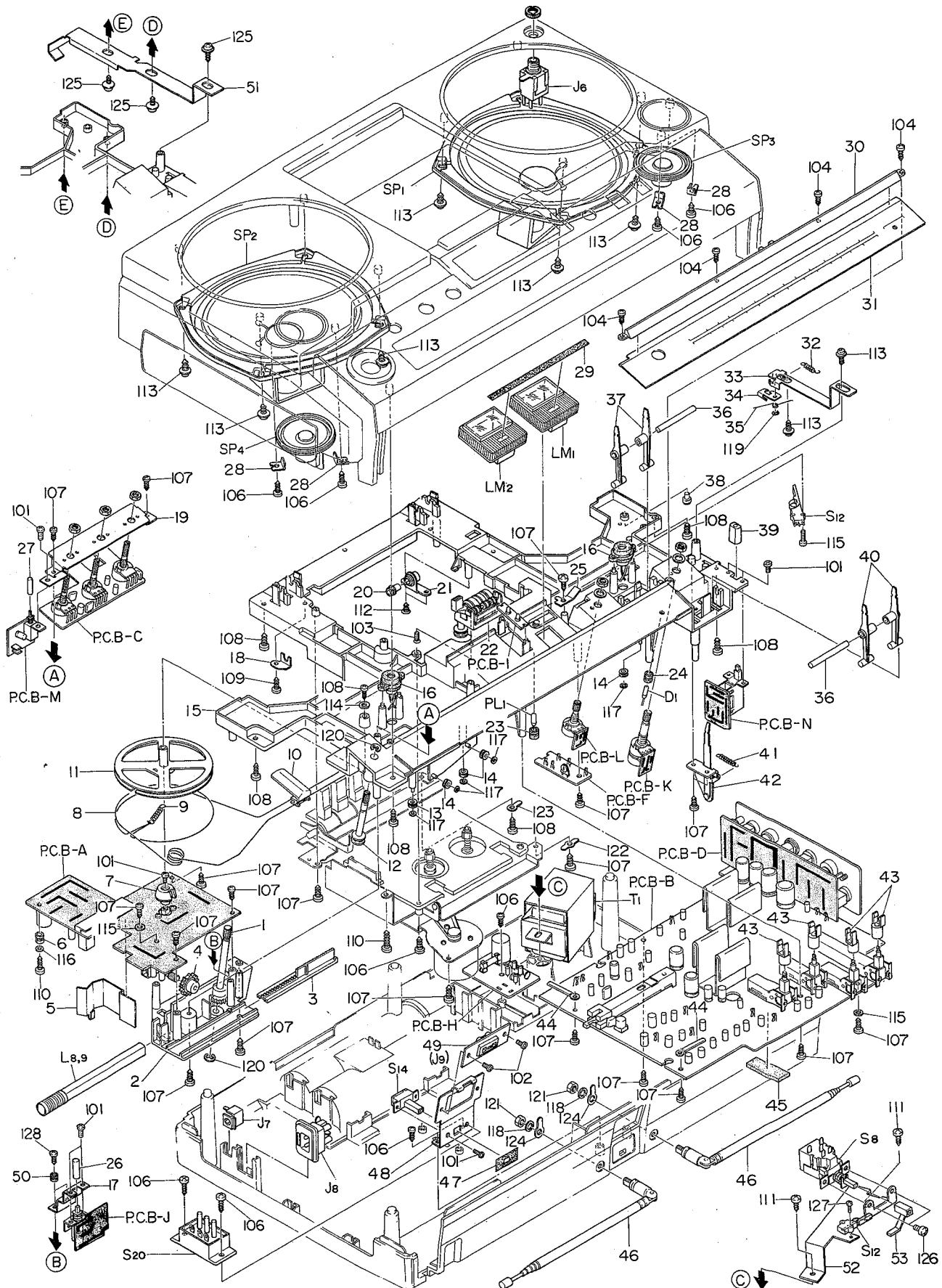
## MECHANICAL PARTS

## PARTS LIST

■ \* mark in this part list shows exclusive part  
(which is used) for only Model TPR-950.

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1~43	09-017-495-01		Cabinet Assembly - "E" model (Main case ass'y + Back cover ass'y + Battery room lid ass'y)		
1~43	09-017-498-01		Cabinet Assembly - "K" model (Main case ass'y + Back cover ass'y + Battery room lid ass'y)		
1~31	09-017-496-01		Main case ass'y - E model		
1~31	09-017-499-01		Main case ass'y - K model		
1-1	82-541-095-01		Main case ass'y	*	1
1-2	82-541-070-01		Name plate, AC jack	*	1
1-3	82-541-019-01		Side panel R	*	1
1-4	82-541-267-01		Shaft, Carrying handle	*	1
1-5	82-445-253-01		Rubber A, Carrying handle		2
1-6	82-541-005-01		Ring, Speaker (Woofers)	*	2
1-7	82-541-037-01		Ring, Speaker (Tweeter)	*	2
1-8	82-541-039-01		Net, Speaker (Tweeter)	*	2
1-9	82-541-054-01		Dust screen cloth, Speaker (Tweeter)	*	2
1-10a	82-541-067-01		Panel, Main case (E model only)	*	1
1-10b	82-541-077-01		Panel, Main case (K model only)	*	1
1-11	82-541-073-01		Dial window ass'y	*	1
1-12	82-541-035-01		Decorative plate, Tuning knob	*	1
1-13	82-541-016-01		Grille R, ECM	*	1
1-14	82-541-011-01		Panel, Meter	*	1
1-15	82-541-057-01		Peak indicator plate	*	1
1-16	82-541-038-01		Badge, AIWA	*	1
1-17	82-534-048-01		Cassette plate	TPR-980	1
1-18	82-541-064-01		Plate A	*	1
1-19	82-541-017-01		Grille L	*	1
1-20	82-541-020-01		Side panel L	*	1
1-21	82-541-018-01		Panching (Woofers)	*	2
1-22	82-541-046-01		Dust screen cloth, Speaker	*	2
1-23	82-534-203-01		Click plate spring R	TPR-980	1
1-24	82-534-013-01		Handle arm R	TPR-980	2
1-25	82-541-013-01		Handle grip	*	1
1-26	82-541-065-01		Mold plate, L	*	1
1-27	82-541-069-01		Mold plate, R	*	1
1-28	82-541-073-01		Shaft, Button guard	*	1
1-29	82-351-096-21		VT <sub>1</sub> + 3-10		1
1-30	87-341-035-21		UT <sub>1</sub> + 2-6		6
1-31	87-081-827-01		QTT <sub>2</sub> + 3-8 (Black nickle)		4
32~41	09-017-497-01		Back cover ass'y - E model only		
32~41	09-017-500-01		Back cover ass'y - K model only		
1-32	82-541-002-01		Back cover	*	1
1-33	82-422-024-01		Holder, Antenna		2
1-34	82-541-075-01		Antenna plate	*	1
1-35a	82-541-071-01		Name plate, Spec. (E model only)	*	1
1-35b	82-541-072-01		Name plate, Spec. (K model only)	*	1
1-36	82-541-045-01		Dust screen cloth, Back cover	*	2
1-37	87-038-032-01		Battery terminal plate		4
1-38	82-222-036-01		Battery terminal spring		2
1-39	82-541-228-01		Battery case	*	1
1-40	87-351-035-01		VT <sub>1</sub> + 2-6		2
1-41	87-351-095-01		VT <sub>1</sub> + 3-8		2
1-42	82-541-003-01		Battery room lid	*	1
1-43	82-416-260-01		Cushion, Battery room lid		2
44~50	09-017-501-01		Cassette lid ass'y		
1-44	82-541-010-01		Cassette lid plate	*	1
1-45	82-541-007-01		Cassette lid ass'y	*	1
1-46	82-461-319-01		Cushion, Cassette lid		1
1-47	82-541-249-01		Spring, Cassette box	*	1
1-48	82-541-264-01		Pressure plate spring R	*	1
1-49	82-541-265-01		Pressure plate spring L	*	1
1-50	82-541-051-01		U + 3-12		2
1-51	82-541-041-01		Tuning knob ass'y	*	1
1-52	82-541-021-01		Volume knob A	*	2
1-53	82-541-022-01		Volume knob B	*	2
1-54	82-541-044-01		Knob A, Lever switch S	*	2
1-55	82-541-023-01		Volume knob C	*	1
1-56	82-541-024-01		Volume knob D	*	1
1-57	82-541-052-01		Sleep knob (E model only)	*	1
1-58	82-541-050-01		Knob B, Lever switch S	*	2
1-59	82-541-025-01		Band knob	*	1
1-60	82-541-092-01		Battery plate	*	1
1-61	82-541-076-01		Knob, Power switch (K model only)	*	1

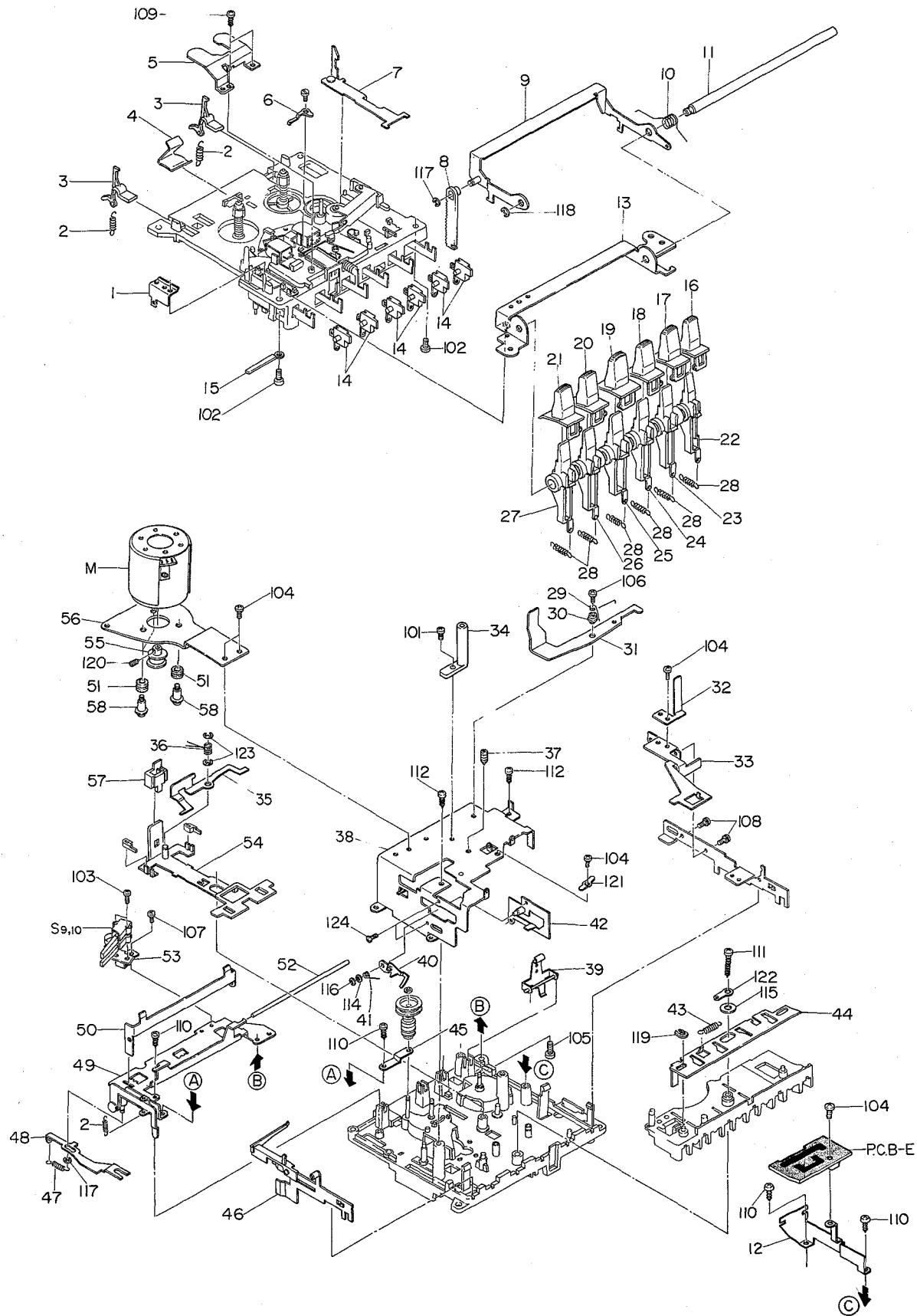
## **EXPLODED VIEW-2**



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
2-1	82-541-205-01		Gear C, Band selector	*	1
2-2	82-541-202-01		Chassis, Tuning	*	1
2-3	82-541-204-01		Gear B, Band selector	*	1
2-4	82-541-203-01		Gear A, Band selector	*	1
2-5	82-535-616-01		Shield plate	TPR-915	1
2-6	87-087-029-01		Rubber cushion		1
2-7	82-439-311-01		Drum joint	TPR-905	1
2-8	87-096-045-01		Dial string		1
2-9	82-534-290-01		Spring	TPR-980	1
2-10	82-541-014-01		Dial pointer	*	1
2-11	82-439-310-01		Drum	TPR-300	1
2-12	82-541-232-01		Shaft, Tuning dial	*	1
2-13	81-302-107-01		Roller		1
2-14	81-385-014-01		Roller		4
2-15	82-541-201-01		Chassis, Radio	*	1
2-16	87-064-063-01		Holder A, ECM		2
2-17	82-541-299-01		Metal fitting	*	1
2-18	82-541-280-01		Metal fitting, Push button shaft	*	1
2-19	82-541-226-01		Metal fitting, Volume	*	1
2-20	82-534-264-01		Gear, Oil-damper	TPR-980	1
2-21	82-534-250-01		Metal fitting, Oil-damper ass'y	TPR-980	1
2-22	87-040-103-01		Counter		1
2-23	82-463-216-01		Rubber bushing		1
2-24	87-087-027-01		Rubber cushion		1
2-25	82-541-275-01		Plate spring	*	1
2-26	82-541-061-01		Knob	*	1
2-27	82-545-016-01		Push button, LOUDNESS		1
2-28	82-541-235-01		Metal fitting, Tweeter	*	4
2-29	82-541-059-01		Himeron cloth, Meter	*	1
2-30	82-541-012-01		Reflector board	*	1
2-31	82-541-066-01		Dial plate	*	1
2-32	82-541-243-01		Spring, Sleep lever (E model only)	*	1
2-33	82-541-233-01		Sleep slide lever ass'y (E model only)	*	1
2-34	82-530-223-01		Lock plate (E model only)		1
2-35	82-541-250-01		Spring, Sleep switch (E model only)	*	1
2-36	82-541-246-01		Shaft, Lever switch	*	2
2-37	82-541-251-01		Lever B, Lever switch	*	2
2-38	82-534-254-01		Lock pin, Power switch lever (E model only)	TPR-980	1
2-39	82-541-043-01		Knob, Light switch	*	1
2-40	82-541-244-01		Lever A, Lever switch	*	2
2-41	82-541-245-01		Spring, Sleep metal fitting	*	1
2-42	82-541-236-01		Metal fitting ass'y, Sleep	*	1
2-43	82-541-241-01		Joint, Lever switch	*	4
2-44	87-038-039-01		Wire binder		2
2-45	82-421-261-01		Cushion, Circuit board		1
2-46	87-043-039-01		Whip antenna		2
2-47	82-541-058-01		Himeron cloth, antenna switch	*	1
2-48	82-541-227-01		Metal fitting, External antenna		1
2-49	82-463-088-01		Terminal plate		1
2-50	87-087-027-01		Rubber cushion		2
2-51	82-541-294-01		Slide plate, Power switch (K model only)	*	1
2-52	82-541-295-01		Metal fitting, Power switch (K model only)	*	1
2-53	82-539-213-01		Lever, Power switch (K model only)		1

## EXPLODED VIEW-3

As this is a PM-1 mechanism, the exploded view is omitted (see the supplement PM-1 mechanism adjustment manual). The exploded view below shows the additional mechanism of the PM-1. Also shown are the attachments of the motor and a list of such.



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-541-284-01		Plate spring, Wire holder	*	1
3-2	82-541-247-01		Spring	*	2
3-3	82-541-223-01		REC blocking lever	*	2
3-4	82-534-297-01		Pressure plate spring	TPR-980	1
3-5	82-541-628-01		Shield plate, Head	*	1
3-6	82-539-206-01		Earth plate, Erase head	TPR-905	1
3-7	82-541-220-01		Cassette lock lever ass'y	*	1
3-8	82-541-240-01		Lever, Oil-damper	*	1
3-9	82-541-212-01		Cassette box lever ass'y	*	1
3-10	82-541-272-01		Spring	*	1
3-11	82-541-216-01		Shaft, Push button	*	1
3-12	82-541-296-01		Metal fitting, CrO <sub>2</sub> switch	*	1
3-13	82-541-218-01		Metal fitting, Push button	*	1
3-14	82-541-229-01		Selector knob	*	6
3-15	87-038-039-01		Wire binder	*	1
3-16	82-541-257-01		Push lever, PAUSE	*	1
3-17	82-541-255-01		Push lever, STOP	*	1
3-18	82-541-254-01		Push lever, FF	*	1
3-19	82-541-252-01		Push lever, FWD	*	1
3-20	82-541-253-01		Push lever, REW	*	1
3-21	82-541-256-01		Push lever, REC	*	1
3-22	82-541-031-01		Push key, PAUSE	*	1
3-23	82-541-030-01		Push key, STOP	*	1
3-24	82-541-028-01		Push key, FF	*	1
3-25	82-541-027-01		Push key, FWD	*	1
3-26	82-541-032-01		Push key, REW	*	1
3-27	82-541-029-01		Push key, REC	*	1
3-28	82-541-248-01		Spring, Push lever	*	6
3-29	82-534-271-01		Tspring, REC lever	TPR-980	1
3-30	82-534-212-01		Collar, REC lever	TPR-980	1
3-31	82-541-224-01		Lever, REC	*	1
3-32	82-541-225-01		P spring, REC	*	1
3-33	82-541-281-01		Lever, One-push recording	*	1
3-34	82-541-274-01		Supporter, Circuit board	*	1
3-35	82-439-271-01		Lever, CrO <sub>2</sub> selector	TPR-300	1
3-36	82-534-266-01		Spring, CrO <sub>2</sub> selector	TPR-980	1
3-37	82-385-311-01		Thrust screw	AD-6300	1
3-38	82-541-260-01		Flywheel bearing plate	*	1
3-39	82-541-297-01		Plate spring, CrO <sub>2</sub> selector	*	1
3-40	82-534-294-01		Lock plate	TPR-980	1
3-41	82-534-295-01		T spring A, PAUSE	TPR-980	1
3-42	82-541-302-01		Metal fitting ass'y, Pause lock plate	*	1
3-43	82-283-289-01		Spring, Play idler lever	*	1
3-44	82-294-215-01		Plate, One-push recording	*	1
3-45	82-581-286-01		Earth plate, Worm gear	*	1
3-46	82-541-269-01		Pause lever ass'y	*	1
3-47	82-541-245-01		Spring, Sleep metal fitting	*	1
3-48	82-541-215-01		Slide lever, REC blocking	*	1
3-49	82-541-207-01		Metal fitting ass'y, REC blocking	*	1
3-50	82-541-219-01		Lever, REC blocking	*	1
3-51	87-087-029-01		Rubber cushion	*	3
3-52	82-541-217-01		Shaft, REC blocking lever	*	1
3-53	82-541-263-01		Metal fitting, Power switch	*	1
3-54	82-439-270-01		Brake plate	TPR-300	1
3-55	82-541-279-01		Motor pulley	*	1
3-56	82-541-230-01		Holder, Motor	*	1
3-57	82-290-212-01		Switch pressure plate	*	1
3-58	87-081-483-01		Motor screw, M2.6	*	3

The following is the part number list of the ~~\*\*\*\*\*~~ marked parts of the PM-1 mechanism.

Ref. No.	Part No.	Description	Q'ty		Ref. No.	Part No.	Description	Q'ty	
1-6	82-439-457-01	Lock plate	1		2-50	82-541-276-01	Flywheel ass'y	1	
1-13	82-385-332-01	Spring B, Head adjusting	1		2-51	82-385-314-21	Rubber belt	1	
2-33	82-294-217-11	REC lever ass'y	1		2-52	82-385-311-01	Screw for thrust	1	
2-49	82-541-278-01	Main belt	1		2-60	82-385-309-21	Worm gear B ass'y	1	

Ref. No.	Part No.	Description	Q'ty	
1-101	87-351-100-01	VT <sub>1</sub> + 3-20	7	

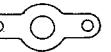
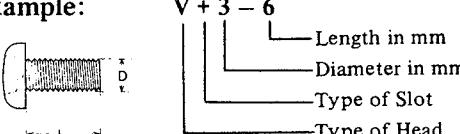
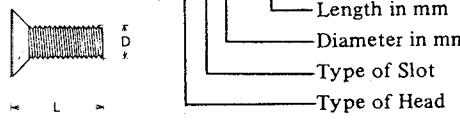
Ref. No.	Part No.	Description	Q'ty	
2-101	87-253-073-01	U + 2.6-6	9	
2-102	87-253-094-01	U + 3-6	2	
2-103	87-231-094-21	Q + 3-6	1	
2-104	87-341-036-21	VT <sub>1</sub> + 2-8	4	
2-105	87-351-037-21	VT <sub>1</sub> + 2-10	1	
2-106	87-351-095-01	VT <sub>1</sub> + 3-8	9	
2-107	87-351-096-21	VT <sub>1</sub> + 3-10	23	
2-108	82-351-097-21	VT <sub>1</sub> + 3-12	7	
2-109	82-351-099-01	VT <sub>1</sub> + 3-16	1	
2-110	87-351-102-01	VT <sub>1</sub> + 3-20	2	
2-111	87-341-096-01	UT <sub>1</sub> + 3-10	2	
2-112	87-231-096-01	QT <sub>1</sub> + 3-10	2	
2-113	87-510-095-01	VTF + 3-8	10	
2-114	87-081-165-01	W3-10-0.5	1	

Ref. No.	Part No.	Description	Q'ty	
2-115	87-081-015-01	FW3-8-0.5	2	
2-116	87-081-017-01	FW3-8-1	1	
2-117	87-081-464-01	PW1.8-5-0.5	5	
2-118	87-421-309-01	SW-5	2	
2-119	87-441-003-01	STE-1.5	1	
2-120	87-441-012-01	STE-5	2	
2-121	87-421-028-01	N-5	2	
2-122	87-450-404-01	LA-4	1	
2-123	87-450-414-01	LB-4	1	
2-124	87-450-418-01	LB-8	2	
2-125	87-511-095-01	VTF + 3-8	3	
2-126	87-251-092-01	U + 3-4	2	
2-127	87-251-036-71	U + 2-8	1	
2-128	87-341-100-21	UT <sub>2</sub> + 3-16	2	

Ref. No.	Part No.	Description	Q'ty	
3-101	87-261-093-01	V + 3-5	1	
3-102	87-263-094-01	V + 3-6	2	
3-103	87-253-038-01	U + 2-12	2	
3-104	87-253-092-11	U + 3-4	4	
3-105	87-253-094-01	U + 3-6	1	
3-106	87-253-095-01	U + 3-8	1	
3-107	87-081-236-01	VS + 2-4	2	
3-108	87-084-071-01	VS + 2.6-4	3	
3-109	87-351-072-01	VT <sub>1</sub> + 2.6-4	2	
3-110	87-351-095-01	VT <sub>1</sub> + 3-8	2	
3-111	87-081-551-01	VT <sub>1</sub> + 3-21	1	
3-112	87-342-074-01	UT <sub>1</sub> + 2.6-8	2	

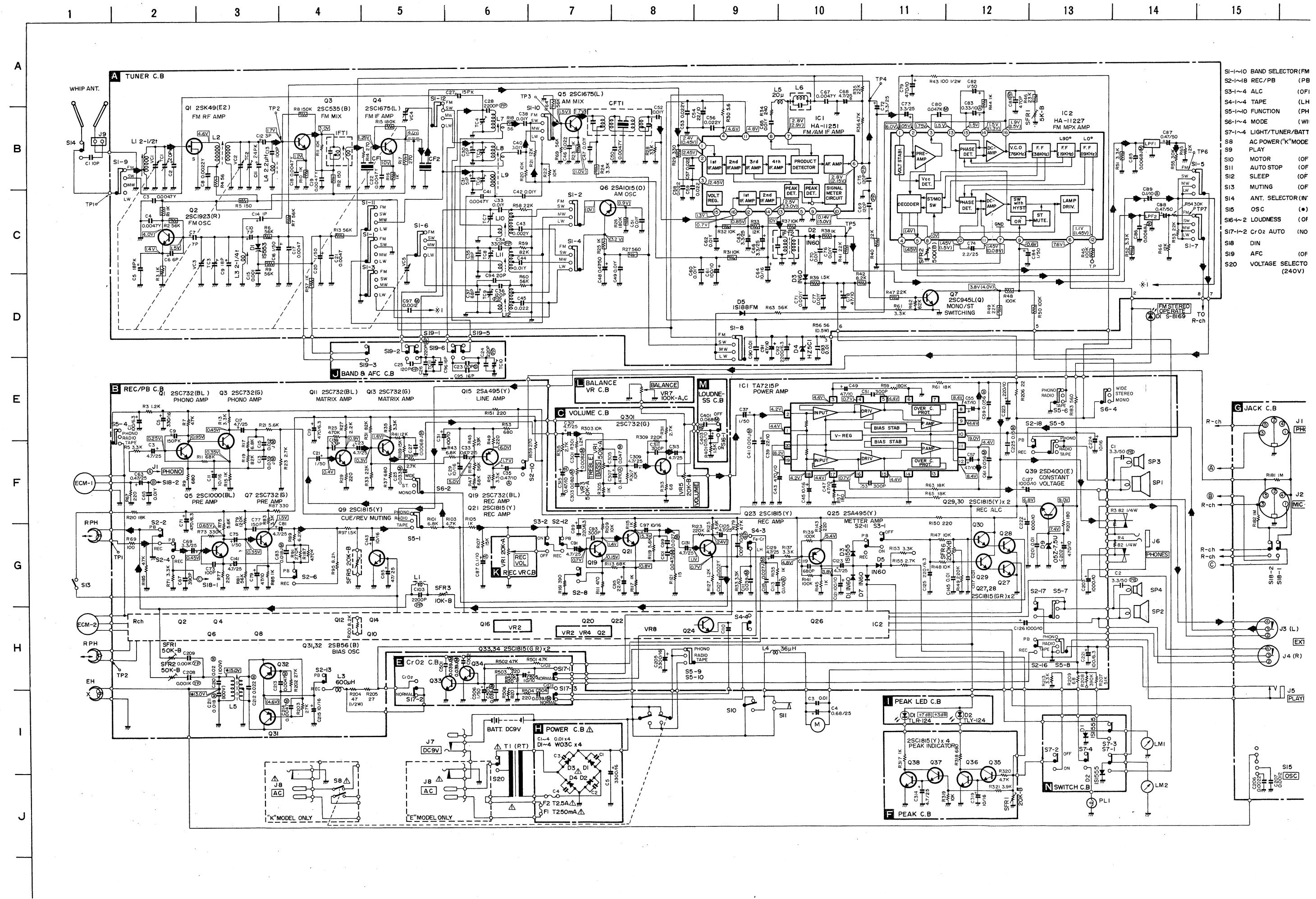
Ref. No.	Part No.	Description	Q'ty	
3-113	87-081-501-01	VTT + 2.6-4	1	
3-114	82-277-323-01	W2.2-6-0.3	2	
3-115	87-081-165-01	W3-10-0.5	1	
3-116	87-441-003-01	STE-1.5	2	
3-117	87-441-009-01	STE-3	4	
3-118	87-441-011-01	STE-4	1	
3-119	87-442-003-01	STP-3	1	
3-120	87-374-071-01	SS2.6-4	1	
3-121	87-450-404-01	LA-4	1	
3-122	87-450-414-01	LB-4	1	
3-123	87-441-006-01	STE-2.3	2	
3-124	87-261-033-21	V + 2-4	2	

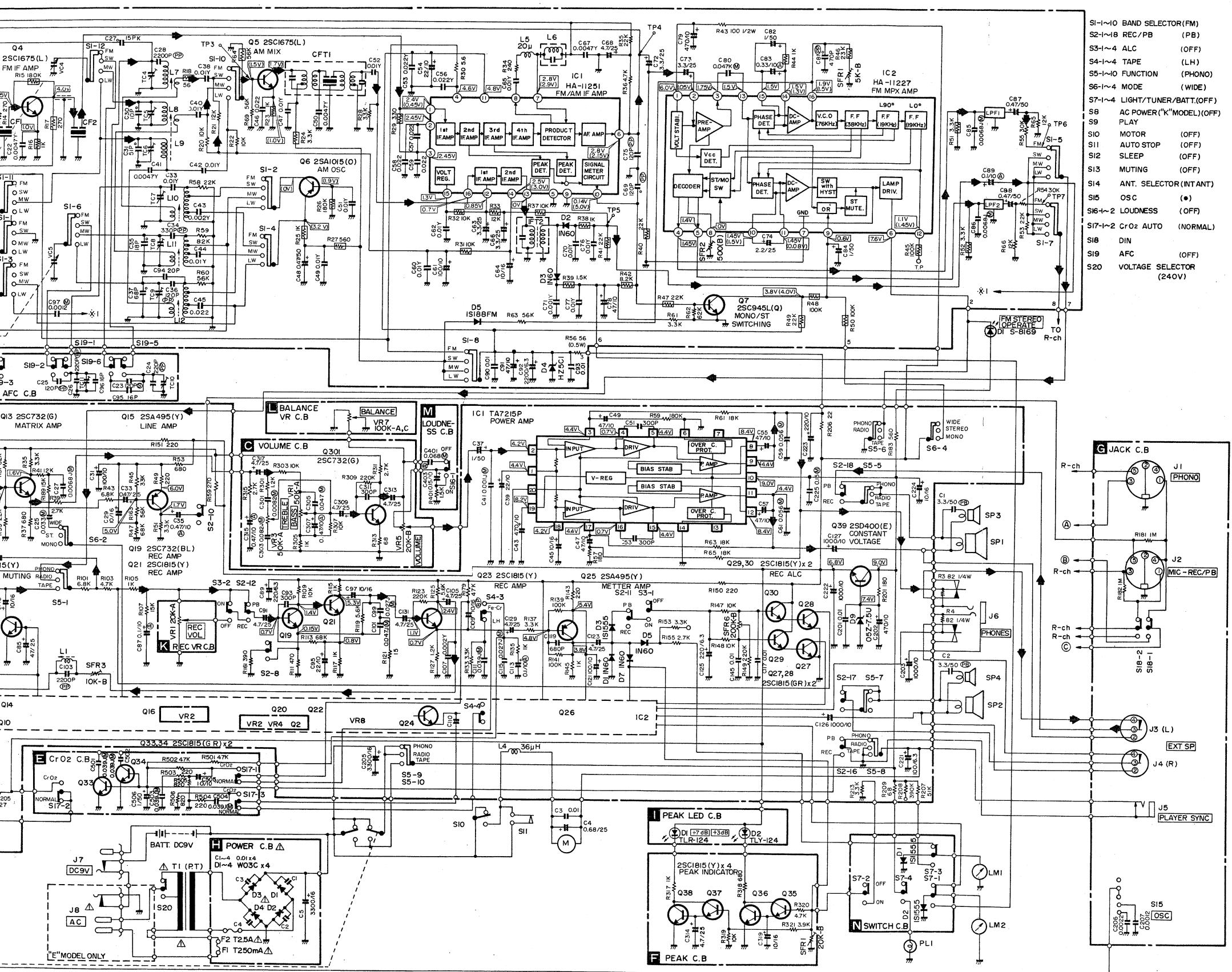
## HARDWARE NOMENCLATURE

V:	Pan head screw		N:	Nut	
U:	Binding head screw		STE:	E ring	
Q:	Flat countersunk head screw		W:	Washer	
VT1:	Pan head tapping screw		FW:	Fiber washer	
UT1:	Binding head tapping screw		PW:	Poly-slider washer	
QT1:	Flat countersunk head tapping screw		SW:	Spring washer	
VS:	Pan head screw with spring washer		LA:	Lug terminal plate	
VTT:	Pan head tap-tight screw		LB:	Lug terminal plate	
VTF:	Flange and Pan head tapping screw		Example:	V + 3 - 6	 <p>Length in mm Diameter in mm Type of Slot Type of Head</p>
			Example:	Q + 3 - 6	 <p>Length in mm Diameter in mm Type of Slot Type of Head</p>

## ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1	82-541-857-01		Printed indiv., Packing	*	1
2	82-541-852-01		Cushion L, Printed indiv.	*	1
3	82-541-853-01		Cushion R, Printed indiv.	*	1
4	87-051-137-01		Poly-vinyl sack (for AC power cord)		1
5	87-056-607-01		Poly-vinyl sack (for case)		1
6a	82-541-910-01		Instructions booklet (E model only)	*	1
6b	82-541-906-01		Instructions booklet (K model only)	*	1
7	82-541-907-01		Label, POP	*	1
8	87-051-171-01		Poly-vinyl sack (for instruction)		1
9	87-056-009-01		Distributors list		1
10	80-291-658-01		Tape cassette DMC-147		1
11a	87-034-883-01		AC power cord (E model only)		1
11b	87-034-871-01		AC power cord (K model only)		1
12	87-047-061-01		Battery SUM-1AE		6
13	87-056-008-01		Label, AC power cord (K model only)		1
14	87-056-016-01		Tag, Main voltage (K model only)		1
15	87-058-025-01		Head cleaning pole ass'y		1





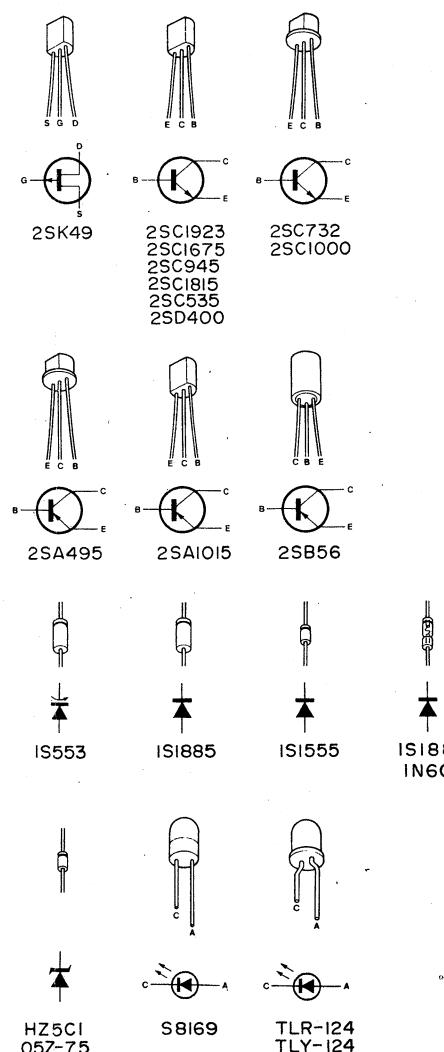
**NOTES:**

- 1) — B (+) power supply
- 2) ➔ Signal path  
➔ Rec path, AM signal path.
- 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals.  
But ( ) is with AM reception or recording.  
An asterisk (\*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
- 4) Resistors with no designation have a rated power of  $\frac{1}{4}$ W and a tolerance of  $\pm 5\%$ .
- 5) Capacitors with no designation have a dielectric strength of less than 50WV.
- 6) The only capacitor tolerances indicated are  $\pm 5\%$  (J) and  $\pm 10\%$  (K).
- 7) Ceramic capacitor symbols:
  - For temperature compensation (SL)
  - H<sub>Y</sub> High dielectric constant system (YY)
  - H<sub>Y</sub> High dielectric constant system (YW, YP, YZ)
  - Semiconductor ceramic
- 8) Explanation of symbols:
  - (M) Mylar capacitor
  - (A) Aluminum solid capacitor

- PP Polypropylene film capacitor
- WR Printed resistor
- FR Fuse resistor
-  Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.



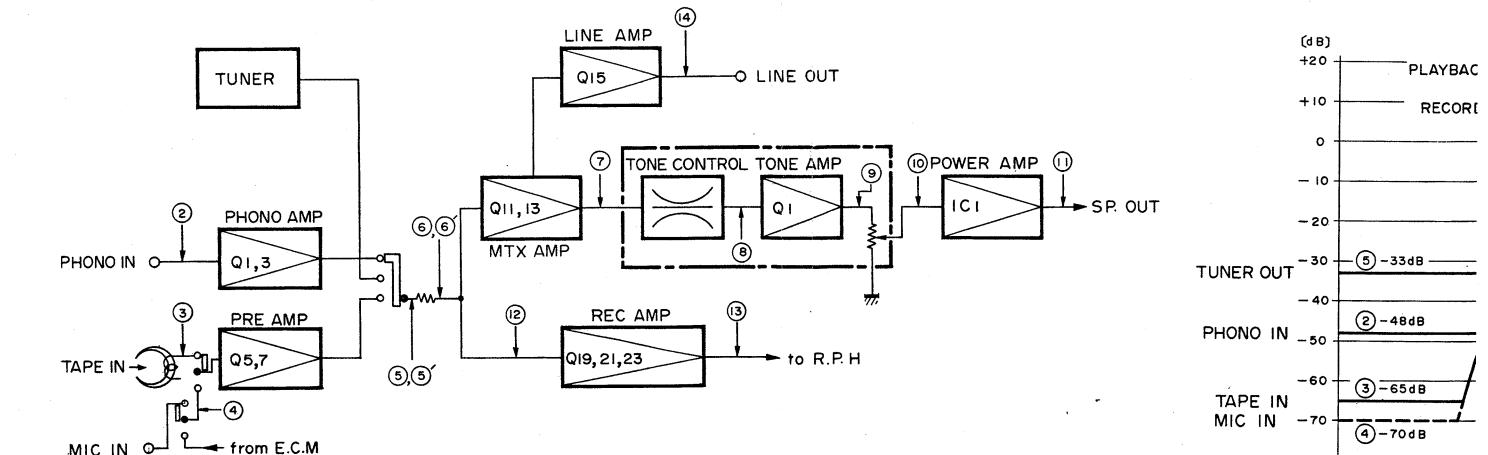
## ELECTRICAL MAIN PARTS LIST

Symbol No.	Part No.	Description
<b>&lt; TUNER CIRCUIT BOARD SECTION &gt;</b>		
PCB-A	82-541-662-01	Tuner circuit board
IC1	87-027-285-01	IC, HA-11251
IC2	87-027-296-01	IC, HA-11227
Q1	87-026-109-01	FET, 2SK49 (E2)
Q2	89-319-232-01	Transistor, 2SC1923 (R)
Q3	89-305-352-01	Transistor, 2SC535 (B)
Q4,5	89-316-752-01	Transistor, 2SC1675 (L)
Q6	89-110-153-01	Transistor, 2SA1015 (O)
Q7	89-309-455-01	Transistor, 2SC945L (Q)
D1	88-052-553-01	Diode, 1S553
D2,3	88-051-060-01	Diode, 1N60
D4	87-027-286-01	Zener diode, HZ5C1
D5	88-052-188-11	Diode, 1S188 (FM)
L1	82-539-657-01	FM antenna coil
L2	82-546-601-01	FM RF coil
L3	87-007-088-01	FM OSC coil, 2/4t
L4	87-005-101-01	FM choke coil, 2.2μH
L5	87-005-104-01	Coil, 20μH
L6	87-008-182-01	FM IFT
L7	82-539-651-01	SW antenna coil
L8,9	82-541-642-01	LW, MW bar antenna coil
L10	87-007-092-01	SW OSC coil
L11	87-007-057-01	MW OSC coil
L12	82-479-664-11	LW OSC coil
VC1~5	87-011-105-01	PVC
TC2,3,7,8		
TC1,4,5,6	87-011-099-01	Trimmer
TC9	85-708-604-21	Trimmer
TC10	87-011-021-01	Trimmer, 1AT-54
CF1,2	87-008-169-01	FM ceramic filter
CFT1	87-008-162-01	AM ceramic filter transformer (E model only)
CFT1	87-008-150-01	Ceramic filter transformer (K model only)
IFT1	87-008-174-01	FM IFT
IFT2	87-008-164-01	AM IFT
LPF1,2	87-028-038-01	Low-pass filter
S1	82-541-688-01	Rotary switch (BAND SELECTOR)
SFR1	87-021-466-01	Semi-fixed resistor, 5kΩ-B
SFR2	87-021-527-01	Semi-fixed resistor, 500Ω-B
	87-032-534-01	Pin, 4P
PCB-O	82-541-663-01	Relay circuit board
< Capacitors >		
C89	87-015-311-01	0.1μF 10V Aluminum solid
C83	87-015-320-01	0.33μF 10V Aluminum solid
C36,69,75	87-014-035-01	120pF PP
C34	87-014-045-01	330pF PP
C81	87-014-049-01	470pF PP
C28	87-014-065-01	2200pF PP
C52	89-663-815-01	0.01μF Semiconductor
C45,46,53,	87-017-003-01	0.022μF Semiconductor
56,57,58,		
59		
<b>&lt; REC/PB CIRCUIT BOARD SECTION &gt;</b>		
PCB-B	82-541-652-11	REC/PB circuit board
IC1,2	87-027-227-01	IC, TA-7215P
Q1,2,11,12,	89-307-326-01	Transistor, 2SC732 (BL)
19,20		
Q3,4,7,8,	89-307-325-01	Transistor, 2SC732 (G)
13,14		
Q5,6	89-310-006-01	Transistor, 2SC1000 (BL)

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
△ F2	87-035-139-01	Fuse "T" 2.5A	△ S8	82-541-645-11	Power transformer
	87-098-020-01	Fuse label, "T" 2.5A	D1	87-027-218-01	Light emitting diode, S
	87-032-323-01	Fuse clamp	D1,2	87-027-097-01	(OPERATE/FM STER
<b>&lt; PEAK LED CIRCUIT BOARD SECTION &gt;</b>					
PCB-I	82-541-667-01	Peak LED circuit board	RPH	87-046-158-01	REC/PB head
D1	87-027-262-01	Light emitting diode, TLR-124 (PEAK + 7 dB)	EH	87-046-127-01	Erase head
D2	87-027-263-01	Light emitting diode, TLY-124 (PEAK + 3 dB)	ECM1,2	85-868-019-01	ECM, CMU-9 (B)
<b>&lt; BAND &amp; AFC CIRCUIT BOARD SECTION &gt;</b>					
PCB-J	82-541-649-01	Band & AFC circuit board	M	87-045-111-01	Motor
S19	82-541-643-01	Push switch (49 m band AFC)	PL1	82-540-609-01	Pilot lamp (DIAL)
TC10	87-011-021-01	Trimmer, 1AT-54	SP1,2	82-541-685-01	Speaker, Woofer
TC11	85-708-604-21	Trimmer	SP3,4	82-541-609-01	Speaker, Tweeter
<b>&lt; REC VOLUME CIRCUIT BOARD SECTION &gt;</b>					
PCB-K	82-541-668-01	REC volume circuit board	S9,10	87-031-419-01	Level meter A, L (K model only)
VR1,2	82-541-625-01	Volume, 20kΩ-A (REC VOLUME)	S11	87-031-393-01	Micro switch (PLAY, I
<b>&lt; BALANCE VOLUME CIRCUIT BOARD SECTION &gt;</b>					
PCB-L	82-541-666-01	Balance volume circuit board	S12	87-031-418-01	Leaf switch (AUTO ST
VR7,8	82-541-624-01	Volume, 100kΩ-A (BALANCE)	S14	82-541-607-01	Micro switch (SLEEP)
<b>&lt; LOUDNESS CIRCUIT BOARD SECTION &gt;</b>					
PCB-M	82-541-653-01	Loudness circuit board	S20	87-031-364-01	Slide switch (ANT SEL
S16	82-541-644-01	Push switch (LOUDNESS)	J6	87-032-881-01	Slide switch (VOLTAC
<b>&lt; CAPACITOR &gt;</b>			J7	82-266-214-11	Jack 6.3φ (PHONES)
C403,404	87-015-367-01	0.15μF 10V Aluminum solid	J8	87-032-434-01	AC jack
			J9	82-488-656-01	FM DIN antenna termi
				87-036-013-01	RH core
<b>&lt; CAPACITOR &gt;</b>					
			C1,2	82-981-610-01	< Capacitor > 3.3μF 50V Elect

⚠: Safety component symbol  
This symbol is given to important parts which maintain the safety of the product, and which conform to special safety specifications. When replacing a component with this symbol, make sure that you use a designated part.

## LEVEL DIAGRAM



Symbol No.	Part No.	Description
0,21, 23,24, 30	89-318-154-01	Transistor, 2SC1815 (Y)
16,25, 28	89-104-954-01	Transistor, 2SA495 (Y)
32	89-318-155-01	Transistor, 2SC1815 (GR)
5,6,	89-200-562-01	Transistor, 2SB56 (B)
	89-404-005-01	Transistor, 2SD400 (E)
	88-051-060-01	Diode, 1N60
	87-027-097-01	Diode, 1S1555
	87-027-228-01	Zener diode, 05Z-7.5 (U)
	87-003-044-01	Trap coil
	82-401-661-01	Choke coil, 600 $\mu$ H
	87-003-039-01	Choke coil, 36 $\mu$ H
	82-418-612-01	Bias OSC coil
	82-533-608-01	Slide switch (REC/PB)
1,2	82-541-604-01	Lever switch (ALC, TAPE)
3,4	82-541-606-01	Lever switch (FUNCTION)
5	82-541-605-01	Lever switch (MODE)
6	87-021-239-01	Semi-fixed resistor, 50k $\Omega$ -B
	87-021-357-01	Semi-fixed resistor, 10k $\Omega$ -B
	87-021-358-01	Semi-fixed resistor, 20k $\Omega$ -B
	87-021-454-01	Semi-fixed resistor, 200k $\Omega$ -B
	87-015-311-01	< Capacitors > 0.1 $\mu$ F 10V Aluminum solid
88, 3,114	87-015-314-01	0.47 $\mu$ F 10V Aluminum solid
36	87-015-141-01	10 $\mu$ F 16V Electrolytic BP
9,110	87-014-065-01	2200pF PP
3,104		
<b>VOLUME CIRCUIT BOARD SECTION</b>		
-C	82-541-616-11	Volume circuit board
1,302	89-307-325-01	Transistor, 2SC732 (G)
2,3,4	82-541-623-01	Volume, 50k $\Omega$ -A (BASS, TREBLE)
6	82-541-646-01	Volume, 20k $\Omega$ -B (VOLUME)
	87-015-314-01	< Capacitor > 0.47 $\mu$ F 10V Aluminum solid
	82-541-616-11	Volume circuit board
	82-541-639-01	Jack circuit board Jack plate ass'y (PHONO, MIC-REC/PLAY, EXT-SP, PLAYER SYNC)
	82-541-647-01	Slide switch (OSC)
	82-541-654-01	CrO <sub>2</sub> circuit board
	89-318-155-01	Transistor, 2SC1815 (GR)
	87-031-381-01	Slide switch (CrO <sub>2</sub> )
	82-541-669-01	Peak circuit board
	89-318-154-01	Transistor, 2SC1815 (Y)
	87-021-434-01	Semi-fixed resistor, 20k $\Omega$ -B
	87-033-137-01	Power circuit board
	87-027-247-01	Diode, W03C
	87-035-145-01	Fuse, "T" 250mA
	87-098-010-01	Fuse label, "T" 250mA

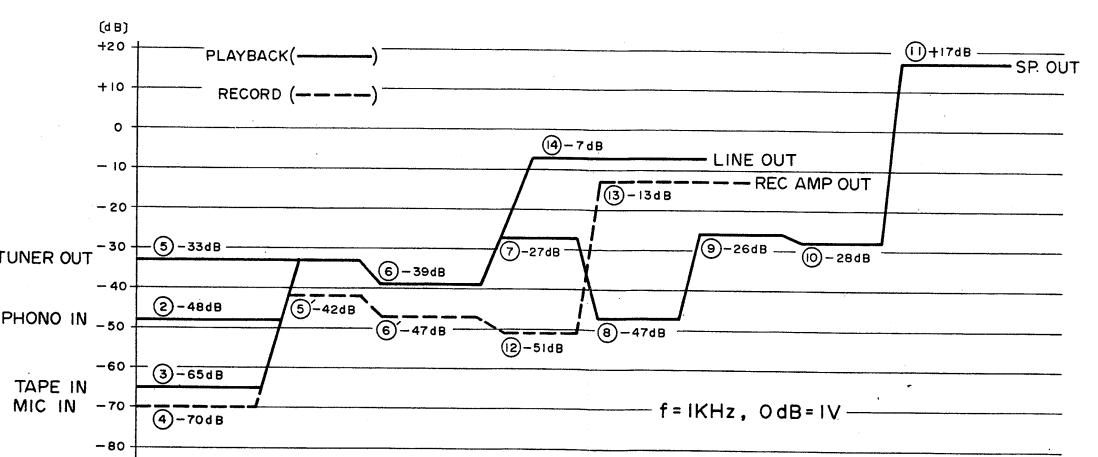
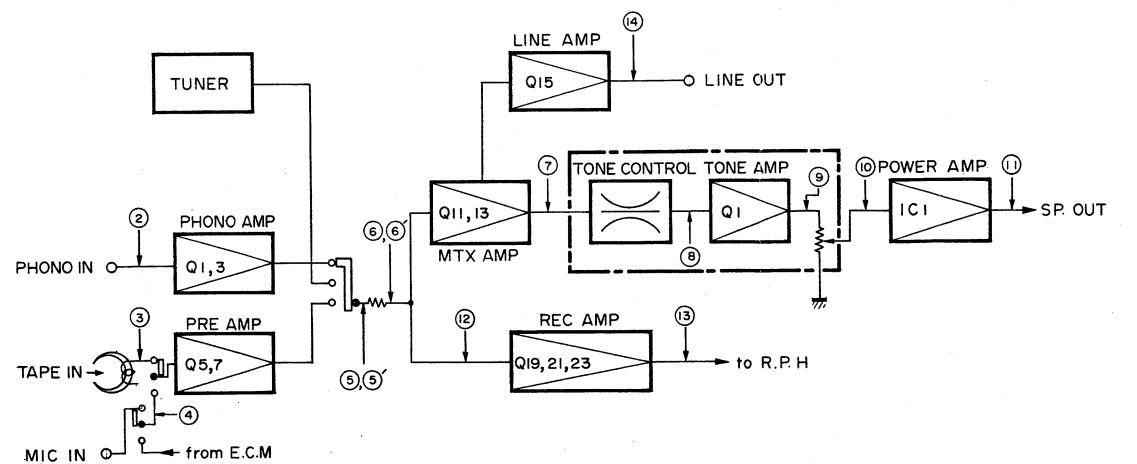
Symbol No.	Part No.	Description
△ F2	87-035-139-01	Fuse "T" 2.5A
	87-098-020-01	Fuse label, "T" 2.5A
	87-032-323-01	Fuse clamp
		<b>&lt; PEAK LED CIRCUIT BOARD SECTION &gt;</b>
PCB-I	82-541-667-01	Peak LED circuit board
D1	87-027-262-01	Light emitting diode, TLR-124 (PEAK + 7 dB)
D2	87-027-263-01	Light emitting diode, TLY-124 (PEAK + 3 dB)
		<b>&lt; BAND &amp; AFC CIRCUIT BOARD SECTION &gt;</b>
PCB-J	82-541-649-01	Band & AFC circuit board
S19	82-541-643-01	Push switch (49 m band AFC)
TC10	87-011-021-01	Trimmer, 1AT-54
TC11	85-708-604-21	Trimmer
		< Capacitor >
C23,25	87-014-035-01	120pF PP
C24,26	87-014-041-01	220pF PP
		<b>&lt; REC VOLUME CIRCUIT BOARD SECTION &gt;</b>
PCB-K	82-541-668-01	REC volume circuit board
VR1,2	82-541-625-01	Volume, 20k $\Omega$ -A (REC VOLUME)
		<b>&lt; BALANCE VOLUME CIRCUIT BOARD SECTION &gt;</b>
PCB-L	82-541-666-01	Balance volume circuit board
VR7,8	82-541-624-01	Volume, 100k $\Omega$ -A (BALANCE)
		<b>&lt; LOUDNESS CIRCUIT BOARD SECTION &gt;</b>
PCB-M	82-541-653-01	Loudness circuit board
S16	82-541-644-01	Push switch (LOUDNESS)
		< Capacitor >
C403,404	87-015-367-01	0.15 $\mu$ F 10V Aluminum solid

Symbol No.	Part No.	Description
		<b>&lt; SWITCH CIRCUIT BOARD SECTION &gt;</b>
PCB-N	82-541-629-21	Switch circuit board
D1,2	87-027-097-01	Diode, 1S1555
S7	82-541-603-01	Slide switch (LIGHT/TUNER/ BATT)
		<b>&lt; MISCELLANEOUS &gt;</b>
△ T1	82-541-645-11	Power transformer
D1	87-027-218-01	Light emitting diode, S8169 (OPERATE/FM STEREO)
RPH	87-046-158-01	REC/PB head
EH	87-046-127-01	Erase head
ECM1,2	85-868-019-01	ECM, CMU-9 (B)
M	87-045-111-01	Motor
PL1	82-540-609-01	Pilot lamp (DIAL)
SP1,2	82-541-685-01	Speaker, Woofer
SP3,4	82-541-609-01	Speaker, Tweeter
LM1	82-541-610-01	Level meter A, L
LM2	82-541-611-01	Level meter B, R
△ S8	87-031-479-01	Push switch (AC POWER) (K model only)
S9,10	87-031-419-01	Micro switch (PLAY, MOTOR)
S11	87-031-393-01	Leaf switch (AUTO STOP)
S12	87-031-418-01	Micro switch (SLEEP)
S14	82-541-607-01	Slide switch (ANT SELECTOR)
△ S20	87-031-364-01	Slide switch (VOLTAGE SELECTOR)
J6	87-032-881-01	Jack 6.3 $\phi$ (PHONES)
J7	82-266-214-11	DC jack
△ J8	87-032-434-01	AC jack
J9	82-488-656-01	FM DIN antenna terminal
	87-036-013-01	RH core
C1,2	82-981-610-01	< Capacitor > 3.3 $\mu$ F 50V Electrolytic BP

△: Safety component symbol

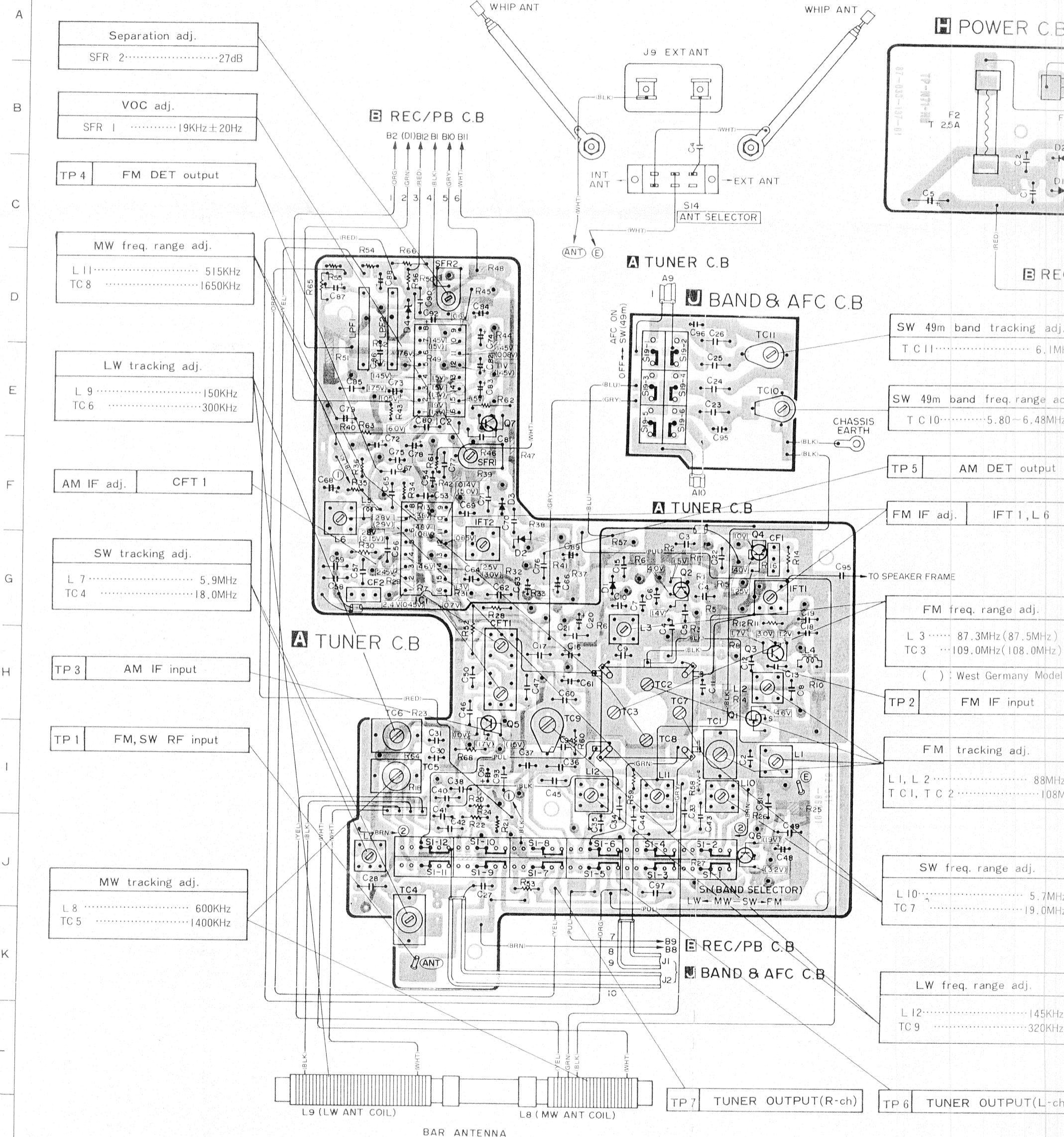
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

### LEVEL DIAGRAM



## WIRING-1

1 2 3 4 5 6 7 8 9 10 11

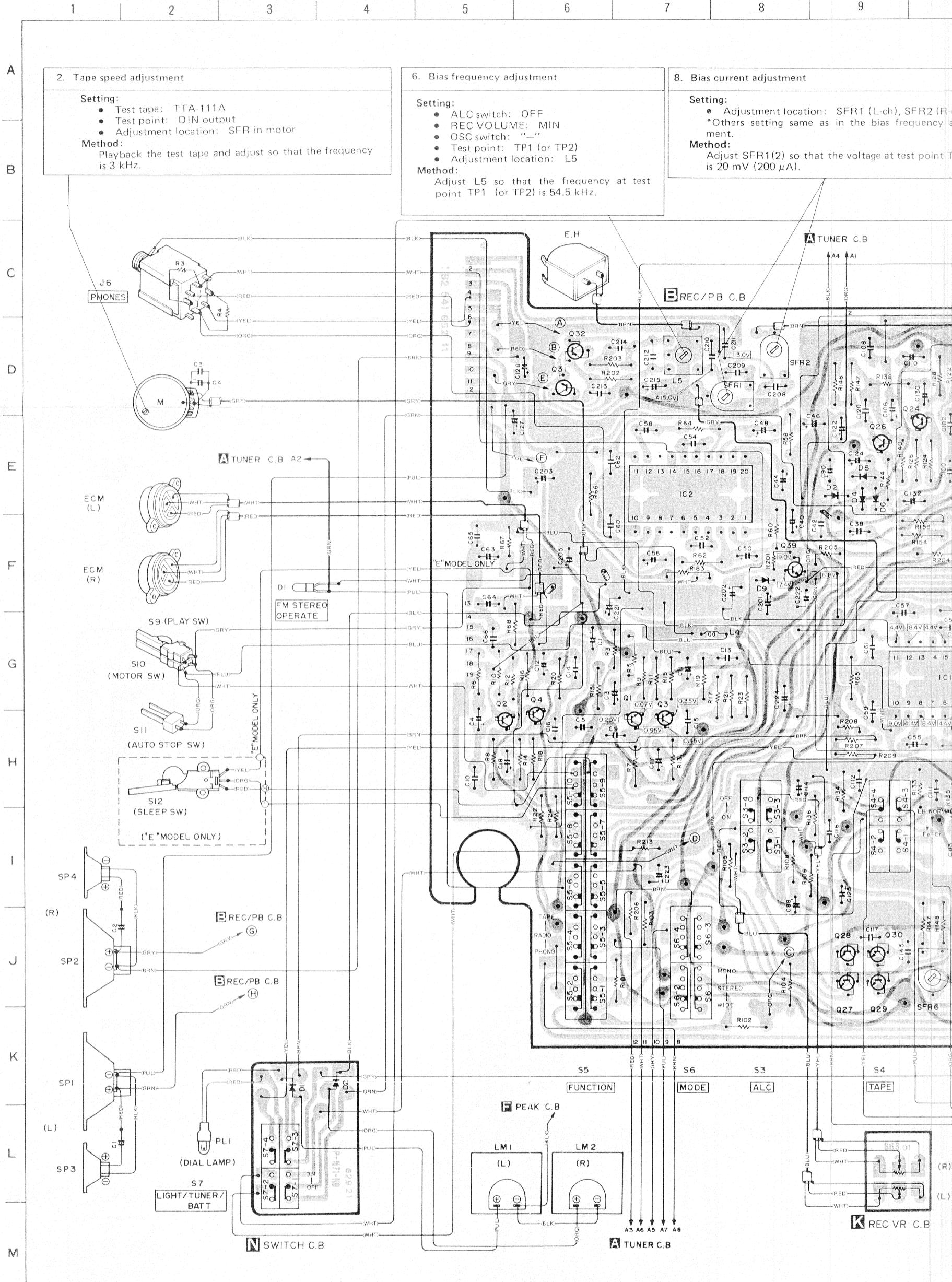


Symbol No.
C2
C9
C11
L2

How to change to upper limit



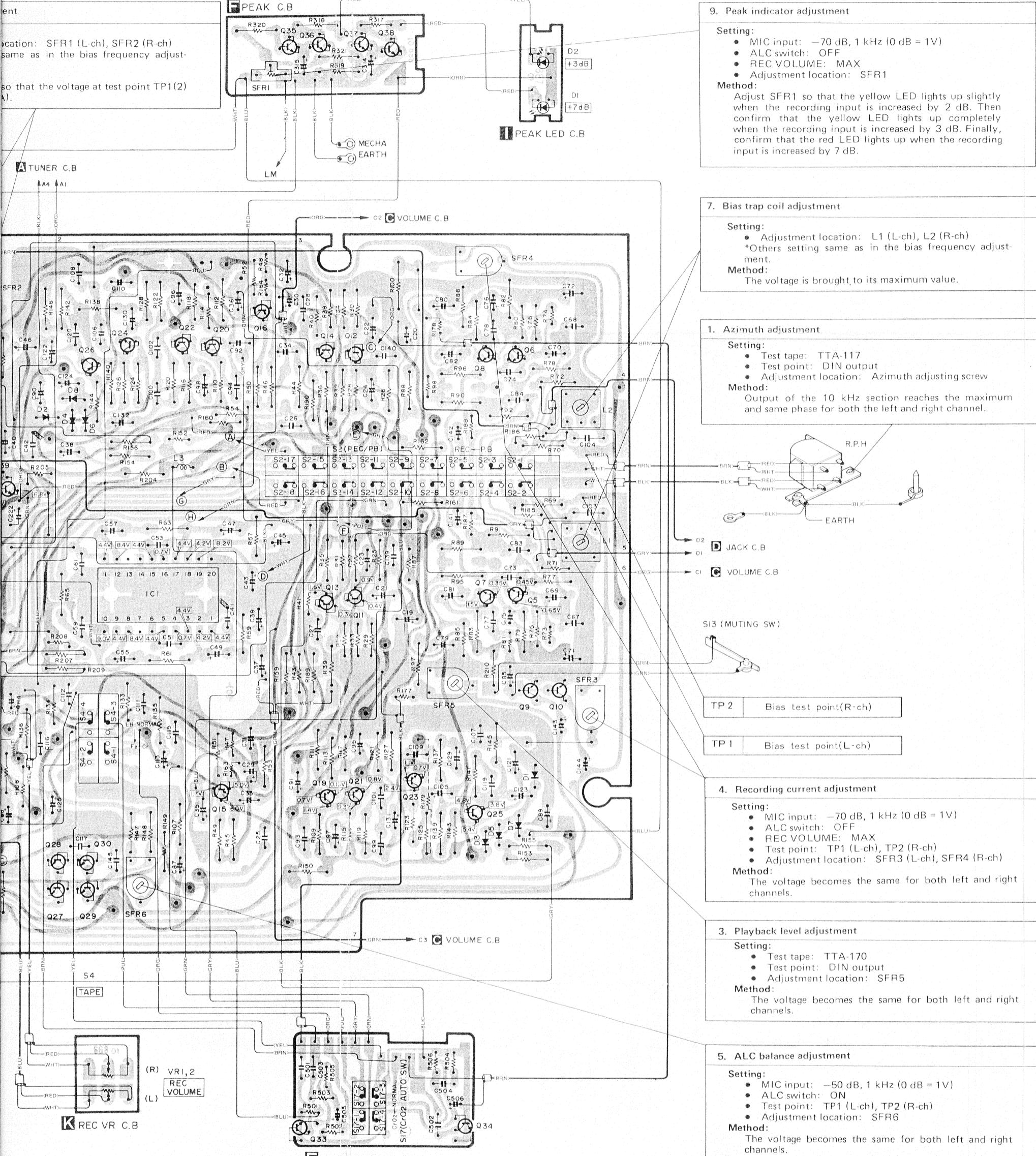
## WIRING-2



NOTES (1) B (+) Pattern Component side pattern

(2) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. An asterisk (\*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

9 10 11 12 13 14 15 16 17 18 19



hers pattern  
when there are no signals.  
ltmeter during recording.